west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3190
Plant ID No.:	103-00086
Applicant:	Stone Energy Corporation
Facility Name:	Potts Wellpad
Location:	near New Martinsville, Wetzel County
NAICS Code:	211111
Application Type:	Construction
Received Date:	May 20, 2014
Engineer Assigned:	David Keatley
Fee Amount:	$2,000
Date Fee Received:	May 21, 2014
Complete Date:	November 20, 2014
Due Date:	February 18, 2014
Applicant Ad Date:	July 16, 2014
Newspaper:	*Wetzel Chronicle*
UTM's:	Easting: 515.879 km Northing: 4,391.864 km Zone: 17
Description:	After-the-Fact permit for the following emission units: seven (7) 0.5 mmBtu/hr line heaters, one (1) 210-bbl condensate tank, five (5) produced water tanks, one (1) 104.7-bhp natural gas fired generator engine, and one (1) 50-bhp natural gas fired emergency generator engine.

DESCRIPTION OF PROCESS

Raw natural gas goes from seven (7) natural gas wells to seven (7) natural gas wellheads to be metered. From the wellheads the raw natural gas goes to seven (7) 0.5 mmBtu/hr line heaters. After the natural gas is heated the raw natural gas will be separated in a three phase separator. The produced water from the three phase separator will go to five (5) produced water tanks. The produced water will be pumped to a produced water pipeline. The condensate from the three phase separator leaves the facility via pipeline. The vapors from the three-phase separator go to a fuel gas separator.

Condensate from the fuel gas separator goes to one (1) 210-bbl condensate tank. The maximum condensate throughput from tank T01 will be 4,000 gallons/year. The natural gas from the fuel gas separator exits the facility via pipeline. The facility will have a 104.7-bhp four-stroke rich-burn Cummins PSI 5.7 L natural gas fired generator engine to provide electric power for the facility being controlled by NSCR. The facility will also have a 50-bhp four-stroke rich-burn Tradewinds TGM30-UL natural gas fired emergency back-up generator engine.

SITE INSPECTION

Douglas Hammell, from DAQ's Compliance and Enforcement Section, conducted a site inspection of the site on July 17, 2014. The nearest residence was approximately 1,290 feet away and the site was deemed acceptable for a natural gas production facility.

Directions to the facility from New Martinsville. From SR 2 turn onto CR 3 (Doolin Run Road). Travel east on CR 3 for approximately 0.3 miles to American Ridge Rd. / Slop Hollow (CR 3/1). Turn left onto CR 3/1 and travel for approximately 4 miles until you reach CR 22 (Schupbach Ridge Rd.) . Stay left onto Huff Ridge Road and travel approximately 2.3 miles, where the lease road will be on the left. Facility is located at the end of the road.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions for 1e through 7e and 16e were estimated with AP-42 emission factors. Flash emissions for 8e through 13e were estimated using GOR from liquid samples taken at the facility and working & breathing losses were estimated using TANKS 4.0.9d. Emissions from 14e and 15e were estimated with AP-42 and manufacturer's data. Truck Loading 16e will be uncontrolled.

Table 1: Estimated Maximum Controlled Point Source Emissions

Point ID		Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
1e	HTR-1	Line Heater 0.5 MMBtu/hr	Nitrogen Oxides	0.05	0.22
			Carbon Monoxide	0.05	0.19
			Volatile Organic Compounds	0.01	0.02
			PM_{10}	0.01	0.02
			CO_2e	58.51	256.26

2e	HTR-2	Line Heater 0.5 MMBtu/hr	Nitrogen Oxides	0.08	0.33
			Carbon Monoxide	0.07	0.28
			Volatile Organic Compounds	<0.01	0.02
			PM_{10}	<0.01	0.03
			CO_2e	58.51	256.26
3e	HTR-3	Line Heater 0.5 MMBtu/hr	Nitrogen Oxides	0.08	0.33
			Carbon Monoxide	0.07	0.28
			Volatile Organic Compounds	<0.01	0.02
			PM_{10}	<0.01	0.03
			CO_2e	58.51	256.26
4e	HTR-4	Line Heater 0.5 MMBtu/hr	Nitrogen Oxides	0.08	0.33
			Carbon Monoxide	0.07	0.28
			Volatile Organic Compounds	<0.01	0.02
			PM_{10}	<0.01	0.03
			CO_2e	58.51	256.26
5e	HTR-5	Line Heater 0.5 MMBtu/hr	Nitrogen Oxides	0.08	0.33
			Carbon Monoxide	0.07	0.28
			Volatile Organic Compounds	<0.01	0.02
			PM_{10}	<0.01	0.03
			CO_2e	58.51	256.26
6e	HTR-6	Line Heater 0.5 MMBtu/hr	Nitrogen Oxides	0.08	0.33
			Carbon Monoxide	0.07	0.28
			Volatile Organic Compounds	<0.01	0.02
			PM_{10}	<0.01	0.03
			CO_2e	58.51	256.26
7e	HTR-7	Line Heater 0.5 MMBtu/hr	Nitrogen Oxides	0.08	0.33
			Carbon Monoxide	0.07	0.28
			Volatile Organic Compounds	<0.01	0.02
			PM_{10}	<0.01	0.03
			CO_2e	58.51	256.26
8e	T01	Condensate Tank	Volatile Organic Compounds	0.35	1.52
9e	T02	Produced Water Tank	Volatile Organic Compounds	0.02	0.07
10e	T03	Produced Water Tank	Volatile Organic Compounds	0.02	0.07
11e	T04	Produced Water Tank	Volatile Organic Compounds	0.02	0.07
12e	T05	Produced Water	Volatile Organic	0.02	0.07

		Tank	Compounds		
13e	T06	Produced Water Tank	Volatile Organic Compounds	0.02	0.07
14e	GE-01	PSI EPSIB5.7NGPP Prime Generator Engine 104.7 bhp	Nitrogen Oxides	0.02	0.06
			Carbon Monoxide	0.09	0.37
			Volatile Organic Compounds	0.02	0.06
			PM_{10}	0.02	0.06
			Formaldehyde	0.02	0.07
15e	GE-02	Tradewinds TGM30-UL Emergency Generator Engine 50-bhp	Nitrogen Oxides	0.59	0.15
			Carbon Monoxide	2.41	0.61
			Volatile Organic Compounds	0.59	0.15
			PM_{10}	<0.01	0.01
			Formaldehyde	<0.01	0.01
16e	TL-01	Truck Loading	Volatile Organic Compounds	0.01	<0.01

Table 2: Proposed Estimated Maximum Controlled Facility Wide Emissions

Pollutant	Maximum Annual Facility Wide Emissions (tons/year)
Nitrogen Oxides	1.71
Carbon Monoxide	2.23
Volatile Organic Compounds	3.39
Total Particulate Matter	0.15
PM_{10}	0.15
Sulfur Dioxide	0.02
Formaldehyde	0.08
n-Hexane	0.03
Benzene	0.01
Toluene	0.01
Total HAPs	0.12
CO_2e	1,845

REGULATORY APPLICABILITY

The following rules and regulations apply to the facility:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers) is to establish emission limitations for smoke and particulate matter which are discharged from fuel burning units.

45CSR2 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of all of the proposed fuel burning units (HTR-1 through HTR-7) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2. However, Stone is subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

45CSR10 (To Prevent and Control Air Pollution from the Emissions of Sulfur Oxides)

45CSR10 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 3 (weight emission standard), 6 (registration), 7 (permits), and 8 (testing, monitoring, recordkeeping, reporting). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of all of the proposed fuel burning units (HTR-1 through HTR-7) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR10.

45CSR13 (Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation)

This facility is subject two substantive requirements 40CFR60 Subpart OOOO and 40CFR60 subpart JJJJ and is required to obtain a permit under this rule.

45CSR16 (*Standards of Performance for New Stationary Sources Pursuant to 40CFR60)*

45CSR16 incorporates by reference the standards of performance for new stationary sources (40CFR60). This facility is subject to 40CFR60 Subpart OOOO and 40CFR60 subpart JJJJ and therefore this facility is subject to 45CSR16.

45CSR22 (Air Quality Management Fee Program)

This facility is a minor source as can be seen in Table 2 and not subject to 45CSR30 since they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71. This facility has maximum horsepower capacity less than 1,000 hp (facility wide 154.7 hp) and is a 9M source and is required to pay the $200 annual fee. Stone is required to keep their Certificate to Operate current.

40CFR60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE))

40CFR60 Subpart JJJJ sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the date of construction, date of manufacture, and horsepower (hp) of the spark ignition internal combustion engine. All proposed engines will commence construction after June 12, 2006.

GE-01 and GE-02 are subject to this subpart. GE-01 and GE-02 are certified engines and the Certificate on Conformity will be available in the file. To keep the designation of certified this engine must be operated and maintained to the manufacturer's emission-

related written instructions and must keep records of conducted maintenance to demonstrate compliance.

40CFR60 Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution)

EPA published in the Federal Register new source performance standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. 40CFR60 Subpart OOOO establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO_2) emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011. The following affected sources which commence construction, modification or reconstruction after August 23, 2011 are subject to the applicable provisions of this subpart:

a. Each gas well affected facility, which is a single natural gas well.

The seven (7) natural gas wells that currently exist at this facility were drilled principally for the production of natural gas and were done so after August 23, 2011. Therefore, these wells would be considered affected facilities under this subpart. The compliance date for these hydraulically fractured wells is October 15, 2012. Stone is required under §60.5410 to submit an initial notification, initial annual report, maintain a log of records for each well completion, and maintain records of location and method of compliance. §60.5420 requires Stone demonstrate continuous compliance by submitting reports and maintaining records for each completion operation.

b. Each reciprocating compressor affected facility, which is a single reciprocating compressor located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your reciprocating compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no proposed reciprocating compressors located which will be located at this facility. Therefore, this section of this regulation does not apply.

c. Each storage vessel affected facility, which is a single storage vessel, located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment.

40CFR60 Subpart OOOO defines a storage vessel as a unit that is constructed primarily of nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provides structural support and is designed to contain an

accumulation of liquids or other materials. The following are not considered storage vessels:

- Vessels that are skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges or ships), and are intended to be located at a site for less than 180 consecutive days. If the source does not keep or are not able to produce records, as required by §60.5420(c)(5)(iv), showing that the vessel has been located at a site for less than 180 consecutive days, the vessel described herein is considered to be a storage vessel since the original vessel was first located at the site.

- Process vessels such as surge control vessels, bottoms receivers or knockout vessels.

- Pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere.

This rule requires that the permittee determine the VOC emission rate for each storage vessel affected facility utilizing a generally accepted model or calculation methodology within 30 days of startup, and minimize emissions to the extent practicable during the 30 day period using good engineering practices. For each storage vessel affected facility that emits more than 6 tpy of VOC, the permittee must reduce VOC emissions by 95% or greater within 60 days of startup. The compliance date for applicable storage vessels is October 15, 2013.

As can be seen in Table 1 all tanks located at this facility emit less than 6 tpy of VOC. Therefore T01 through T06 are not subject to this section of this regulation.

40CFR63 Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines)

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

The facility is a minor source of hazardous air pollutants (HAPS < 10 tpy of an individual HAP and < 25 tpy of aggregate HAPs) as can be seen in Table 2. The facility is therefore considered an area source (§63.6585(c)). The engine is considered new stationary RICE (§63.6590(a)(2)(iii)) due to the installation dates of the engines (GE-1 and GE-2) being after June 12, 2006.

Stationary RICE subject to Regulations under 40 CFR Part 60 must meet the requirements of those subparts that apply (40 CFR 60 Subpart JJJJ, for spark ignition engines) if the engine is a new stationary RICE located at an area source (§63.6590(c)(1)). No additional requirements apply for these engines under this subpart.

The following regulations do not apply to the facility:

40CFR60 Subpart 60.18 (General Control Device and Work Practice Requirements)

40CFR60 Subpart 60.18 contains requirements for control devices when they are used to comply with applicable subparts of 40CFR60 and 40CFR61. The vapor combustors that Stone has proposed is not used to comply with one of these rules. The purpose of the vapor combustors is to control emissions from the tanks that are routed to it. However, these tanks are not subject to 40CFR60 Subpart Kb due to their size. In addition 40CFR60.18 refers to flares but makes no mention of vapor combustors, which are essentially enclosed combustion devices. Therefore this facility is not subject to this regulation.

40CFR60 Subpart Kb (Standards of Performance for VOC Liquid Storage Vessels)

40CFR60 Subpart Kb does not apply to storage vessels with a capacity less than 75 cubic meters. The tanks that CHK has proposed to install are 63.60 cubic meters each. Therefore this facility is not subject to this regulation.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will be small amounts of various regulated hazardous air pollutants emitted from the operation of this facility as seen in Table 1. The facility is a minor source of HAPs as can be seen in Table 2. If you want to obtain additional information about certain hazardous air pollutants feel free to visit [http://www.epa.gov/ttn/atw/hlthef/hapindex.html].

AIR QUALITY IMPACT ANALYSIS

Modeling was not performed of this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) as can be seen in Table 2.

RECOMMENDATION TO DIRECTOR

The information provided in this facility's permit application indicates that compliance with all state and federal air quality requirements should be achieved . It is recommended that Stone Energy Corporation should be granted a 45CSR13 Construction permit for Potts Wellpad.

David Keatley
Permit Writer - NSR Permitting

November 20, 2014

Date